CORRELATION BETWEEN FINE NEEDLE ASPIRATION BIOPSY AND HISTOPATOLOGICAL FINDINGS IN THE DIAGNOSIS OF PAROTID TUMORS

PAROTİS TÜMÖRLERİNDE İNCE İĞNE ASPİRASYON BİYOPSİSİ İLE HİSTOPATOLOJİK TANININ KORELASYONU

Fatih Özdoğan, Halil Erdem Özel
KBB Kliniği, Kocaeli Derince Eğitim ve Araştırma Hastanesi, Kocaeli, Türkiye

Öz

Amaç: Parotis tümörlerinin tanısında preoperatif ince iğne aspirasyon biyopsisinin (İİAB), postoperatif histopatolojik tanı ile karşılaştırılması ve İİAB'nin tanısal duyarlılık, özgüllük ve doğruluğunun belirlenmesi amaçlanmıştır. Gereç ve Yöntem: 2010-2015 yılları arasında, parotis kitlesi nedeniyle opere edilen 133 hastanın preoperatif İİAB bulguları, postoperatif histopatolojik bulguları ile karşılaştırılmıştır. İİAB'nin duyarlılık, özgüllük, pozitif tahmin değeri, negatif tahmin değeri ve doğruluk oranları araştırılmıştır. Bulgular: Hastaların 105 tanesi (% 78.9) erkek, 28 tanesi (% 21.1) kadın olup yaş ortalaması 48.6 (22- 77) idi. İİAB sonucu 120 hastada (% 90.2) benign, 9 hastada (% 6.8) malign idi. İİAB sonucu 4 hastada (% 3) tanısal olarak değerlendirilmemiştir. Postoperatif histopatolojik inceleme sonucu 129 hastanın 119 'unda (% 92.2) benign, 10'unda (% 7.8) malign olarak rapor edilmiştir. İİAB'nin duyarlılık değeri, özgüllük değeri, pozitif ve negatif tahmin değerleri ve testin doğruluk değerleri sırasıyla % 80, % 99.1 , % 88.8, % 98.3 ve % 97.6 olarak hesaplanmıştır. Tartışma: İİAB, preoperatif parotis kitlelerinin değerlendirilmesinde güvenilir bir yöntemdir.

Anahtar Kelimeler

Parotis Tümörleri; İnce İğne Aspirasyon Biyopsisi; Özgüllük; Duyarlılık

Abstract

Aim: We aimed to compare the preoperative fine needle aspiration biopsy (FNAB) and postoperative histopathology findings in parotid masses and to determine the diagnostic sensitivity, specificity, and accuracy of FNAB. Material and Method: Preoperative FNAB and postoperative histopathology findings of 133 patients who had been operated for parotid masses between 2010-2015 were included. The specificity and sensitivity values of fine-needle aspiration biopsy as a diagnostic test were calculated. Results: 105 of the patients (78.9%) were male and 28 (21.1%) were female with a mean age of 48.6 (22-77). FNAB was benign for 120 patients (90.2%) and malign for 9 patients (6.8%). FNAB was nondiagnostic in 4 (3%) of the 133 patients. 119 of the patients (92.2%) were reported as benign and 10 of the patients (7.8%) were reported as malign at postoperative histopathological examination. The sensitivity, specificity, positive predictive, negative predictive, and overall accuracy rates were 80%, 99.1%, 88.8%, 98.3% and 97.6%, respectively. Discussion: FNAB is a reliable method of preoperatively assessing parotid tumors.

Keywords

Parotid Tumors; Fine Needle Aspiration Biopsy; Specificity; Sensitivity

DOI: 10.4328/JCAM.4886 Received: 12.12.2016 Accepted: 27.12.2016 Printed: 01.07.2017 J Clin Anal Med 2017;8(4): 324-6
Corresponding Author: Fatih Özdoğan, KBB Kliniği, Kocaeli Derince Eğitim ve Araştırma Hastanesi,Kocaeli, Türkiye.
T.: +90 2623178000 F.: +90 2623178595 E-Mail: ozdogan.fatih@gmail.com

Introduction

The diversity of the cells in the parotid gland has given this gland a rich histological structure. Neoplastic characterization of these cells is responsible for the emergence of many tumor types that display different biological behaviors. The histological type determines the tumor behavior and is closely related to its treatment. Histopathological diagnosis of parotid tumors is very important for this reason. An open biopsy in parotid masses is contraindicated because of the risk of tumor seeding to the skin. This is why FNAB is gaining importance. FNAB is an easy diagnostic method that can be performed without harming the patient.

Even the most experienced cytologists cannot interpret fine needle aspiration biopsy with 100% success [1,2]. Therefore, it may not be possible to obtain a definitive diagnosis in the preoperative period. Nevertheless, the administering of FNAB for every patient with parotid mass is a generally accepted practice. It can make a differential diagnosis of inflammatory, infectious, non-neoplastic masses, and lymphoma, and in some cases it can prevent unnecessary surgeries [3].

The purpose of this study was to demonstrate the diagnostic value of FNAB in the benign-malignant discrimination comparing preoperative FNAB findings in parotid tumors with postoperative histopathologic diagnoses. In addition, the national literature of Turkey is reviewed to investigate the diagnostic value and accuracy of FNAB in parotid tumors applied in conditions in our country.

Material and Method

Between 2010 and 2015, the files of 143 patients who underwent parotidectomy for parotid tumors in the 3rd stage center were retrospectively scanned. Ethics committee approval was obtained (decision number 19/1 dated 10.02.2016). Preoperative FNAB and postoperative histopathology results of 133 patients were included in the study. The preoperative FNAB and postoperative histopathology results were compared and the diagnostic accuracy of the FNAB was investigated.

In the FNAB technique, aspiration was performed with a 22-gauge needle and 20 cc injector under ultrasound guidance without local anesthesia; after four plates were spread, the materials were fixed with alcohol and sent to the cytology laboratory. Histopathological examinations of FNAB and excised masses were performed in the pathology clinic of the same center.

SPSS 17.0 program was used for statistical evaluation and sensitivity, specificity, positive and negative predictive values, and accuracy percentages were calculated in the benign-malignant differentiation of FNAB.

Results

105 (78.9%) of the patients were male, 28 (21.1%) were female and the mean age was 48.6 (22-77) years. Total parotidectomy was performed in 10 patients (7.5%) and superficial parotidectomy was performed in 123 patients (92.5%). In the postoperative histopathology of 120 patients with FNAB results that had been reported as benign, 118 patients were reported as benign and 2 patients were reported as malignant. In the postoperative histopathology of 9 patients whose FNAB results were reported as malignant, 1 patient was reported as benign and 8 patients were reported as malignant. Total of 4 patients whose FNAB results were not diagnostic were excluded. Since the clinical and radiological findings of these 4 patients were benign, superficial parotidectomy and mass excision was performed. Results of postoperative histopathology were also reported as benign (3 pleomorphic adenomas, 1 Warthin tumor). The histopathological distribution of postoperative tumors is shown in Table 1. Sensitivity value, specificity value, positive and negative predictive value, and test accuracy value of FNAB in our study were calculated as 80%, 99.1%, 88.8%, 98.3%, and 97.6%, respectively. The comparison of FNAB and postoperative histopathological findings are summarized in Table 2.

Table 1. Histology of parotid masses.

Benign Lesions	
Pleomorphic adenoma	55
Warthin Tumour	45
Lipoma	5
Reactive Lymphoid Hyperplasia	5
Parotid duct cyst	4
Inflammatory granulation tissue	3
Basal cell adenoma	2
Total	119
Malignant Lesions	
Malignant mixed tomur	2
Adenoid cystic carcinoma	2
Non-Hodgkin Lympha	2
Epidermoid carcinoma	1
Asinic cell carcinoma	1
Myoepithelial carcinoma	1
Carcinosarcoma	1
Total	10

Table 2. Results of fine needle aspiration biopsy (FNAB) as correlates with postoperative histological diagnosis.

		Postoperative Histological Diagnosis	
		Benign	Malignant
FNAB	Benign FNAB	118	2
	Malignant FNAB	1	8

Discussion

Because the parotid gland is subcutaneously localized and tumors of this gland are frequently located in the superficial lobe region, the first symptom in these tumors is often swelling. There are many clues to the difference between benign and malign in the patient history and physical examination, but parotidectomy is often necessary both for the treatment and for the definitive diagnosis. FNAB can make a differential diagnosis of inflammatory, infectious, non-neoplastic masses, and lymphoma. This can prevent unnecessary surgeries [3,4]. FNAB reliability is not 100%, however it is generally accepted in cases of parotid masses. FNAB of the parotid gland or lymphadenopathy may be useful in making a simultaneous neck dissection decision with parotidectomy and informing the patient before the surgery.

Several factors may be effective in obtaining FNAB appro-

priately and correctly interpreting it histopathologically. It is known that the best educated cytopathologists have the best results for diagnosis with FNAB applied at the patient side, and by repeating if necessary [5]. FNAB results may not be diagnostic in between 3% and 34% of the cases . The causes include inadequate cellular content, necrosis, bleeding, and inappropriate technique. In order to reduce nondiagnostic FNAB rates, an experienced cytopathologist should evaluate the specimen and repeat aspirations if necessary [6]. In our series, superficial parotidectomy and mass excision was performed in the 4 cases (3%) in which the FNAB was nondiagnostic and the clinical findings were benign. The exact histopathologic results were reported as benign (3 pleomorphic adenomas, 1 Warthin tumor).

When the national literature of Turkey is reviewed, it is noteworthy that there are many studies on the reliability of FNAB in parotid tumors. By taking advantage of this current knowledge, it was one of the aims of this study to know the diagnostic value and accuracy rate of FNAB in parotid tumors applied in our country. The national data obtained by reviewing the literature are presented in Table 3. When we evaluated national data in the literature, sensitivity, specificity, positive predictive value, negative predictive value, and accuracy average of FNAB were determined as 75.1%, 94.6%, 77.7%, 89.9%, and 92.2%, respectively (Table 3). In our study, the sensitivity, specificity, positive predictive values, negative predictive values, and accuracy value of the FNAB were calculated as 80%, 99.1%, 88.8%, 98.3%, and 97.6%, respectively.

When we look at the international publications on the reliability of FNAB in the case of parotid masses, sensitivity and specificity are similar to those of our national data. Sensitivity values of the FNAB are between 54% and 95% and specificity values are between 86% and 100%.

In conclusion, FNAB is a reliable and easily applied diagnostic method with high sensitivity and specificity rates in malignant-benign differentiation of parotid masses [13].

Table 3. National studies on the diagnostic value of FNAB in parotid tumors.

Publication, Year	n	Sensitivity (%)	Specificity (%)	Positive Predictive value (%)	Negative Predictive value (%)	Accuracy Rate (%)
Aydın et al. (7), 2006	60	94.2	100	96	80	100
Mahmudova et al. (8) 2010	44	73	93	80	89	87
Günizi et al. (9), 2013	66	64	91	58	93	86
Özbey et al. (10), 2014	33	80	96.4	80	96.4	93.9
Aydoğdu et al. (11), 2015	128	75	95.4	75	87.5	85.7
Özdamar et al. (12), 2015	90	69.6	93.1	80	88.5	86.4
Edizer et al. (6), 2016	230	70	93.6	75	95.1	92.5

Competing interests

The authors declare that they have no competing interests.

References

1. Scianna JM, Petruzzelli GJ. Contemporary management of tumors of the salivary glands. Curr Oncol Rep 2007;9:134-8.
2. Alphs HH, Eisele DW, Westra WH. The role of fine needle aspiration in the evaluation of parotid masses. Curr Opin Otolaryngol Head Neck Surg 2006;14(2):62-6.
3. Stewart CJ, MacKenzie K, McGarry GW Mowat A.. Fine-needle aspiration cytology of salivary gland: a review of 341 cases. Diagn Cytopathol 2000;22(3):139-46.
4. Howlett DC. Diagnosing a parotid lump: fine needle aspiration cytology or core biopsy? Br J Radiol 2006;79(940):295-7.
5. Özel HE. Kulak Etrafında Şişlikler. In. Cingi C. Editor. Kulak Burun Boğazda Semptomlar. İstanbul: Etam A.Ş. Matbaa Tesisleri; 2009:148-79.
6. Edizer DT, Server EA, Yiğit Ö, Yıldız M. Tükrük bezi kitlelerinin tedavisinde ince iğne aspirasyon biyopsisinin rolü. Turk Arch Otorhinolaryngol 2016;54:105-11.
7. Aydın S, Hardal Ü, Şanlı A, Evren C, Gül AE. Parotis kitlelerinde ince iğne aspirasyon biyopsisinin yeri. Kartal Eğitim ve Araştırma Hastanesi Tıp Dergisi 2006;17(1):13-6.
8. Mahmudova R, Akyıldız S, Midilli R, Uluöz Ü, Yavuzer A. Parotis kitlelerinde ince iğne aspirasyon biyopsisinin tanısal değeri. Ege Tıp Dergisi 2010;49(2):83-6.
9. Günizi H, Güney K. Parotis kitlelerinde ince iğne aspirasyon biyopsisi ve histolojik bulguları arasındaki korelasyon. Şişli Etfal EAH Tıp Bülteni 2013;47(4):177-80.
10. Özbey AO, Bora F, Kutluhan A, Duymuş M, Bozdemir K. Parotis kitlelerinde ince iğne aspirasyon biyopsisi ile histopatolojinin karşılaştırılması. Kafkas Tıp Bilimleri Dergisi 2014;4(2):57-61.
11. Aydoğdu İ, Saltürk Z, Uyar Y, Yıldırım G, Çakır Ç, Ataç E. İnce iğne aspirasyon biyopsisinin Parotis kitlelerinin tanısındaki yeri. Okmeydanı Tıp Dergisi 2015;31(4):175-8.
12. Özdamar K, Aydın S, Altaş B, Yücebaş K, Altınay S, Öğreden Ş, Oktay MF. Parotis kitlelerinde ince iğne aspirasyon biyopsisinin önemi. KBB Uygulamaları 2015; 3(1): 20-4.
13. Salgarelli AC, Cappare P, Bellini P, Collini M. Usefulness of fine-needle aspiration in parotid diagnostics. Oral Maxillofac Surg 2009;13(4):185-90.

How to cite this article:
Özdoğan F, Özel HE. Correlation Between Fine Needle Aspiration Biopsy and Histopatological Findings in the Diagnosis of Parotid Tumors. J Clin Anal Med 2017;8(4): 324-6.